



Advanced Weld Flaw Evaluation

Standard Flawed Specimens are designed and manufactured to meet the requirements of all known internationally recognized Qualification Programs.

- **Advanced training and practice prior to qualifications on:**
 - Flaw detection
 - Flaw sizing
 - Flaw interpretation
- **Realistic size welds**
- **Common weld geometries**



Sonasection flawed specimens are available either individually or in sets.

Individual specimens

Contain three different flaw types and are:

- All different sizes
- Uniquely numbered
- Supplied with NDE reports
- Supplied with acceptance/rejection criteria

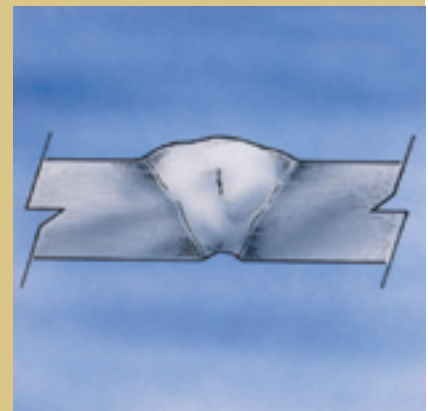
Recommended sets





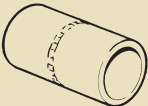

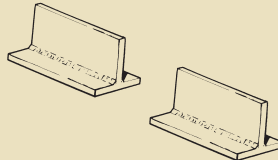
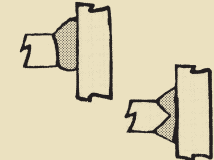


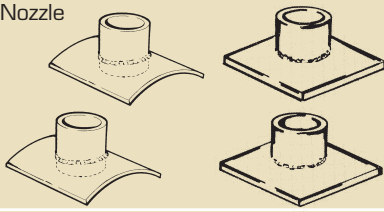
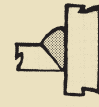


- Contain a selection of individual specimens as above, with an average of three flaws per specimen
- Contain at least one example of each flaw type listed in the flaw table
- Contain a minimum total weld length of 360cm (144")


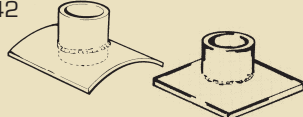
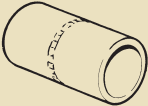


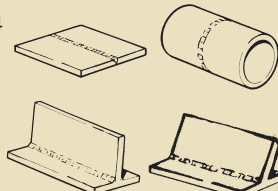
Custom sets




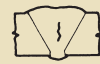








Are manufactured specifically for recognised qualification schemes - for example ASNT ACCP and API

For Level II training, practice and qualification ie ACCP, ASNT-TC-IA, PCN, EN473, API and others






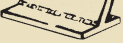
INDIVIDUAL SPECIMENS							
Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size)			Approx Weight kg (lb)	
			Diameter	Thickness	Size		
UC-14	Plate 		N/A	0.6 (1/4)	30x30 (12x12)	4 (9)	
UC-15			N/A	1.2 (1/2)	30x30 (12x12)	8 (18)	
UC-16			N/A	2.5 (1)	30x40 (12x16)	23 (51)	
UC-17	Plate 		N/A	2 (3/4)	30x30 (12x12)	14 (31)	
UC-18			N/A	2.5 (1)	30x40 (12x16)	23 (51)	
UC-19			N/A	3 (1 1/4)	30x44 (12x17 1/4)	31 (68)	
UC-20	Pipe 		8 (3)	1.2 (1/2)	30 (12) long	7 (15)	
UC-21			15 (6)	1.2 (1/2)	30 (12) long	14 (30)	
UC-22			15 (6)	2.5 (1)	30 (12) long	28 (62)	
UC-23			20 (8)	1.2 (1/2)	30 (12) long	18 (39)	
UC-24			20 (8)	2.5 (1)	30 (12) long	37 (82)	
UC-25			30 (12)	1.2 (1/2)	30 (12) long	27 (59)	
UC-26			30 (12)	2.5 (1)	30 (12) long	56 (122)	
UC-27	Tee 		N/A	2 (3/4)	15x15x30 (6x6x12)	14 (31)	
UC-28			N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)	
UC-29			N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)	
UC-30			N/A	3 (1 1/4)	22x22x30 (9x9x12)	31 (68)	
UC-31	Y 		N/A	2.5 (1)	20x20x30 (8x8x12)	23 (51)	
UC-32			N/A	3 (1 1/4)	22x22x30 (9x9x12)	31 (68)	
UC-33	Nozzle 		Penetration Dia. x Thick		Carrier Plate Dimensions L x W x Thickness	54 (120)	
UC-34			10x1.2 (4x1/2)	20x1.2 (8x1/2)			50x50x2.5 (20x20x1)
UC-35			10x1.2 (4x1/2)	20x1.2 (8x1/2)	50x50x2.5 (20x20x1)	43 (94)	
UC-36			10x1.2 (4x1/2)	20x1.2 (8x1/2)	50x50x2.5 (20x20x1)	54 (120)	
UC-37	Node 		Stub Dia. x Thick		Carrier Plate Dimensions L x W x Thickness	75 (165)	
UC-38			20x2 (8x3/4)	25x2 (10x3/4)			50x50x2.5 (20x20x1)

RECOMMENDED SETS					
Specimen Types	Contents	Approx Weight kg (lb)	Specimen Types	Contents	Approx Weight kg (lb)
Set 2 UC-39 	3 x UC-15 1 x UC-16 3 x UC-17 2 x UC-18 3 x UC-19	229 (505)	Set 5 UC-42 	2 x UC-33 2 x UC-34 2 x UC-35 2 x UC-36	412 (907)
Set 3 UC-40 	2 x UC-20 1 x UC-21 1 x UC-22 1 x UC-23 1 x UC-24 1 x UC-25 1 x UC-26	193 (426)	Set 6 UC-43 	2 x UC-37 2 x UC-38	357 (784)
Set 4 UC-41 	4 x UC-27 2 x UC-28 2 x UC-29 2 x UC-30	211 (464)	Set 7 UC-44 	1 x UC-16 1 x UC-19 1 x UC-24 1 x UC-25 1 x UC-26 1 x UC-27 1 x UC-30 1 x UC-31	242 (532)







FLAW TABLE						
						
Toe crack	Root crack	Side-wall crack	Centre-line crack	Transverse crack	Incomplete penetration (SV)	
						
Incomplete penetration (DV)	Porosity	Lack of root fusion	Lamination	Lack of side-wall fusion	Slag	

INDIVIDUAL SPECIMENS						
Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size)			Approx Weight kg (lb)
			Diameter	Thickness	Size	
MC-01	Plate 		N/A	1 (3/8)	30x20 (12x8)	5 (10)
MC-02	Pipe 		8 (3)	1 (3/8)	20 (8) long	4 (9)
MC-03			15 (6)	1 (3/8)	20 (8) long	8 (17)
MC-04			20 (8)	1 (3/8)	20 (8) long	10 (21)
MC-05			30 (12)	1 (3/8)	20 (8) long	22 (48)
MC-06	Tee 		N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
MC-07	Y 		N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
MC-08	Nozzle 		<i>Penetration Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	
MC-09			10x1 (4x3/8)	20x1 (8x3/8)	40x40x1.2 (16x16x1/2)	
MC-10	Node 		<i>Stub Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	
MC-11			20x1 (8x3/8)	25x1 (10x3/8)	40x40x1.2 (16x16x1/2)	
PC-01	Plate 		N/A	1 (3/8)	30x20 (12x8)	5 (10)
PC-02	Pipe 		8 (3)	1 (3/8)	20 (8) long	4 (9)
PC-03			15 (6)	1 (3/8)	20 (8) long	8 (17)
PC-04			20 (8)	1 (3/8)	20 (8) long	10 (21)
PC-05			30 (12)	1 (3/8)	20 (8) long	22 (48)
PC-06	Tee 		N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
PC-07	Y 		N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
PC-08	Nozzle 		<i>Penetration Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	
PC-09			10x1 (4x3/8)	20x1 (8x3/8)	40x40x1.2 (16x16x1/2)	
PC-10	Node 		<i>Stub Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	
PC-11			20x1 (8x3/8)	25x1 (10x3/8)	40x40x1.2 (16x16x1/2)	



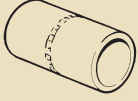


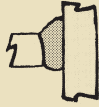

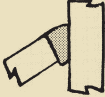

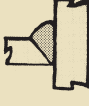


RECOMMENDED SET

		MC-12 Magnetic	PC-12 Penetrant
		1 x MC-01	1 x PC-01
		2 x MC-03	2 x PC-03
		2 x MC-05	2 x PC-05
		1 x MC-06	1 x PC-06
		1 x MC-07	1 x PC-07
70Kg 155lbs			

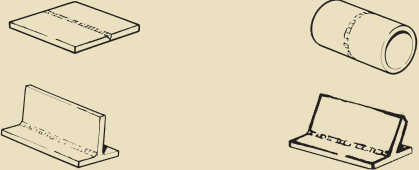
FLAW TABLE

		
Toe crack	Root crack	Centre line crack
		
Transverse crack	Surface porosity	Lack of root fusion











INDIVIDUAL SPECIMENS

Part No	Specimen Types	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size)			Approx Weight kg (lb)
			Diameter	Thickness	Size	
VC-73	Plate 		N/A	1 (3/8)	30x20 (12x8)	5 (10)
VC-74	Pipe 		8 (3)	1 (3/8)	20 (8) long	4 (9)
VC-75			15 (6)	1 (3/8)	20 (8) long	7 (16)
VC-76			20 (8)	1 (3/8)	20 (8) long	10 (21)
VC-77			30 (12)	1 (3/8)	20 (8) long	15 (32)
VC-78	Tee 		N/A	1 (3/8)	15x15x30 (6x6x12)	7 (15)
VC-79	Y 		N/A	1 (1 3/8)	15x15x30 (6x6x12)	7 (15)
VC-80	Nozzle 		<i>Penetration Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	17 (38)
VC-81			10x1 (4x3/8)	20x1 (8x3/8)		
VC-82	Node 		<i>Stub Dia. x Thick</i>		<i>Carrier Plate Dimensions L x W x Thickness</i>	32 (70)
VC-83			20x1 (8x3/8)	25x1 (10x3/8)		

RECOMMENDED SETS

Part No	Specimen Types	Contents	Approx Weight kg (lb)
VC-84	Set 9 	2 x VC-73 2 x VC-75 1 x VC-77 1 x VC-78 1 x VC-79	45 (100)

FLAW TABLE

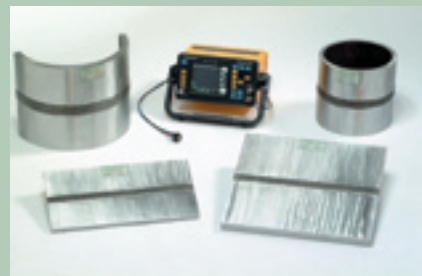
				
Surface porosity	Lack of root fusion	Root concavity	Excess penetration	Incomplete penetration
				
Irregular penetration	Undercut	Concave cap	Excessive cap	Weld spatter

API TRAINING & PRACTICE





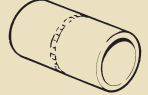

Sonaspexion manufactured all the original qualification specimens for API, so these specimens are ideal for training and pre-qualification practice. Sets available for UT.

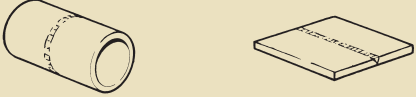
The set includes:













- 4 weld specimens as recommended by API
- 1/2" thk SV plate 15" long
- 1" thk DV plate 15" long
- 8" Dia Sch 80 pipe 8" long (360°)
- 12" Dia Sch 80 pipe 10" long (180°)

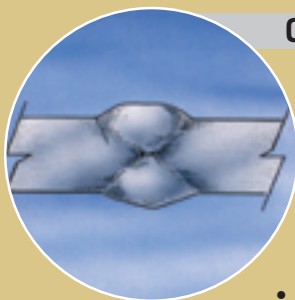


Typical flaws: porosity, slag inclusion, lack of fusion, lack of penetration, root cracks and centre-line cracks.

INDIVIDUAL SPECIMENS						
Part No	Specimen Type	Weld Preparation Type	Approx Dimensions: cm (inch) (or nearest commercial size)			Approx Weight kg (lb)
			Diameter	Thickness	Size	
RC-50	Plate 		N/A	0.6 (1/4)	30x20 (12x8)	3 (6)
RC-51			N/A	1 (3/8)	30x20 (12x8)	5 (10)
RC-52			N/A	1.5 (5/8)	30x20 (12x8)	7 (15)
RC-53			N/A	2 (3/4)	30x20 (12x8)	9 (21)
RC-54			N/A	2.5 (1)	30x20 (12x8)	13 (26)
RC-55			N/A	3 (1 1/4)	30x20 (12x8)	14 (31)
RC-56	Plate 		N/A	0.6 (1/4)	30x20 (12x8)	3 (6)
RC-57			N/A	1 (3/8)	30x20 (12x8)	5 (10)
RC-58			N/A	1.5 (5/8)	30x20 (12x8)	7 (15)
RC-59			N/A	2 (3/4)	30x20 (12x8)	9 (21)
RC-60			N/A	2.5 (1)	30x20 (12x8)	12 (26)
RC-61					N/A	3 (1 1/4)
RC-62	Pipe 		2.5 (1)	0.3 (1/8)	20 (8) long	0.3 (0.7)
RC-63			5 (2)	0.5 (3/16)	20 (8) long	1 (2)
RC-64			8 (3)	0.6 (1/4)	20 (8) long	2 (5)
RC-65			15 (6)	0.6 (1/4)	20 (8) long	4 (10)
RC-66			15 (6)	1.2 (1/2)	20 (8) long	8 (18)
RC-67			20 (8)	1.2 (1/2)	20 (8) long	11 (25)
RC-68			20 (8)	2 (3/4)	20 (8) long	18 (40)
RC-69			30 (12)	1.2 (1/2)	20 (8) long	17 (37)
RC-70			30 (12)	2.5 (1)	20 (8) long	33 (74)

RECOMMENDED SETS			
Part No	Specimen Type	Contents	Approx Weight kg (lb)
RC-71	Set 8 	2 x RC-50 3 x RC-62 1 x RC-55 2 x RC-63 1 x RC-56 1 x RC-64 1 x RC-61 1 x RC-70	78 (172)

FLAW TABLE			
			
Root crack	Transverse crack	Porosity	Lack of root fusion
			
Incomplete penetration	Excess penetration	Root concavity	Slag line
			
Undercut	Tungsten inc	Mismatch	Burn through



Custom Sets

Are manufactured to the customer's requirements and are ideal for companies who do not need a full set but need at least one example of each flaw type:

- Contain a minimum of four specimens
- Contain an example of each flaw from the flaw table
- May be used for one or more NDT method

Secure Specimens (for Examinations)

Are similar to individual specimens except that:

- Specimens are supplied in a sealed container
- Flaw types and distribution are to a specified standard
- Reports are sealed and kept separate from the specimens
- Reports are sent under separate cover to nominated person

STANDARD SPECIMEN SPECIFICATIONS

TYPES/RANGE

The range of flaws available depends on the type of testing being used. See appropriate Flaw Table for full details

FLAW SIZE RANGE

Flaw length from 1cm (3/8") to 4.5cm (3/4")

Flaw through wall height 0.3cm (1/8") to 0.6cm (1/4")

TOLERANCES

Flaw length $\pm 0.3\text{cm}$ (1/8")

Flaw height $\pm 0.2\text{cm}$ (5/64")

Distance from datum $\pm 0.3\text{cm}$ (1/8")

Depth from surface $\pm 0.2\text{cm}$ (5/64")

MATERIAL TYPES

All standard-size specimens are manufactured from carbon steel. For plate, tee and Y specimens material is to BS 4360

Grade 43A or equivalent and for pipe specimens is to ASTM, ANSI, API or similar

(Nozzles and nodes are a combination of both)

All pipe sizes are measured outside diameter

INSPECTION

All materials are subject to 100% visual and Non Destructive Examination to ensure that they are free from flaws which may interfere with product performance.

TOLERANCES

Weld length for plates, tees and Ys, all 30cm (12") $\pm 5\%$.

Weld length for pipes, nozzles and nodes, all as per diameter

Thickness $\pm 10\%$

Diameters $\pm 10\%$

SURFACE FINISH

Parent material adjacent to weld will be a suitable finish for testing the weld profile, either 'as-welded' or ground flush

FINAL INSPECTION

All specimens are subject to in-house Visual and Non Destructive Examination. This work is carried out by experienced and approved technicians

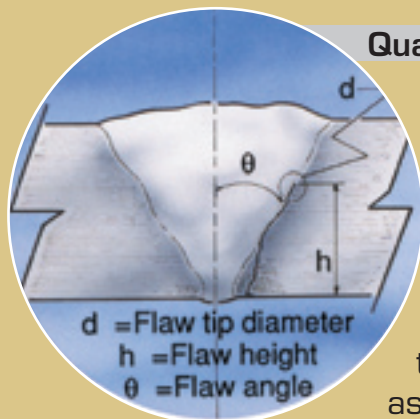
CORROSION PROTECTION

All specimens are coated with a clear corrosion-resistant material before leaving the factory

PACKING

All export orders are suitably packed

Sonaspection reserves the right to alter specifications without notice

**Quality Flaws Assured**

The high quality of our flaws is achieved by a combination of first class workmanship a unique blend of welding and non-destructive testing skills plus a full understanding of the product.

Sonaspection adopt a policy of setting new standards and developing new techniques to improve quality and reliability in order to assure the quality of our flaws.